The ultimate battery charger

Pro Charge U

⚠ DANGER

HIGH VOLTAGE

AVOID SERIOUS INJURY OR DEATH FROM ELECTRICAL SHOCK.
BEFORE PERFORMING ANY ELECTRICAL WORK TURN OFF AC POWER SUPPLY

⚠ DANGER

EXPLOSION HAZARD

AVOID SERIOUS INJURY OR DEATH
MAKE CONNECTIONS IN AN ATMOSPHERE FREE OF EXPLOSIVE FUMES

⚠ WARNING

LOW VOLTAGE

AVOID SERIOUS INJURY FROM ELECTRICAL BURNS AND SPARKS.
BEFORE PERFORMING ANY ELECTRICAL WORK DISCONNECT ANY DC POWER SUPPLY FROM UNIT

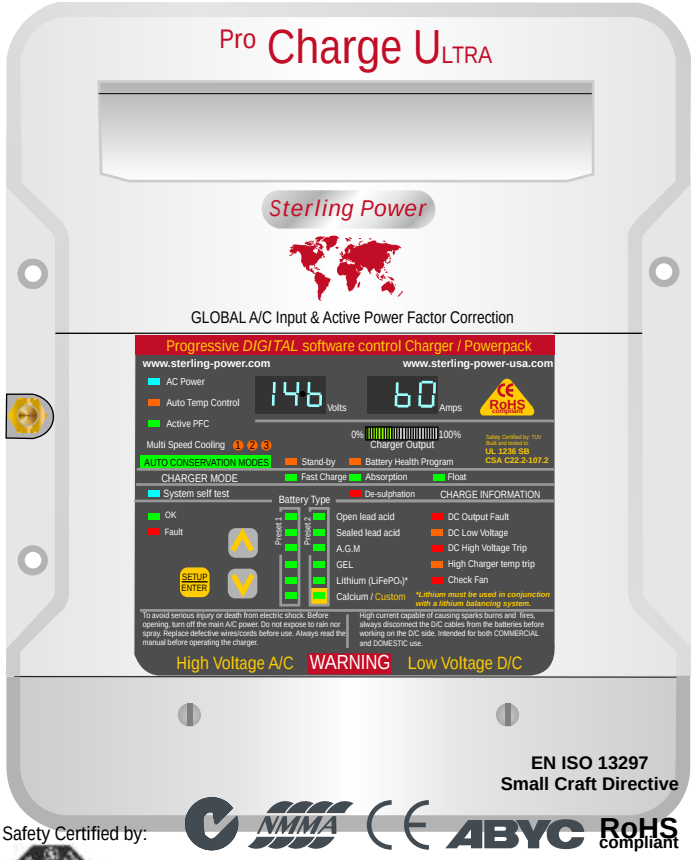
⚠ CAUTION

HOT SURFACES – TO REDUCE RISK OF BURNS DO NOT TOUCH WHILE IN SERVICE

CHARGE ONLY USER SELECTED TYPE BATTERIES
(Flooded, AGM, GEL, lithium or Calcium)
OTHER TYPES OF BATTERIES MAY BURST CAUSING PERSONAL INJURY AND DAMAGE

RISK OF ELECTRIC SHOCK, NO USER SERVICEABLE PARTS, RETURN TO MANUFACTURER FOR SERVICING

THIS UNIT IS IGNITION PROTECTED



EN ISO 13297
Small Craft Directive

Safety Certified by:

To Standards:
UL 1236 SB
CSA C22.2-107.2

12V 60A model, all other units pro rata

Input voltage range	90-270V 40-70Hz
Power Factor at 230V	0.95
Efficiency	88.5%
Full load current (110/230v)	10 /4.8
Ripple noise (R.M.S.)	50mV
Ground leakage	0.75 mA

Generator/ mains power required to run unit (watts)

12 v	20 amp	approx	300 watts
12 v	30 amp	approx	450 watts
12 v	40 amp	approx	600 watts
12 v	50 amp	approx	750 watts
12 v	60 amp	approx	900 watts
24 v	20 amp	approx	600 watts
24 v	30 amp	approx	900 watts

volt metre accuracy	+/- 1.5%
amp metre accuracy	+/- 1%

This product requires a knowledge of both a/c and d/c electrical installation. Please do not install or attempt to install this product unless you are qualified to do so. All effort is made to make the instructions as safe as possible but it is not possible to cover all electrical safety and installation aspects. Sterling can only assume a certain basic knowledge is held by the installer.

Top Function
1) 11 pre programmed battery curves including $LiFePO_4$.
2) 1 custom set, can be set from charger, no need for computer.
3) 2 x digital meters for current and voltage measurement.
4) 1 x power meter to show what reserve power left on the unit.
5) PFC, active, up to 0.99 pf, ensuring efficient power conversion, up to almost 90% as opposed to about 50% for older non PFC technology.
6)New synchronised rectification output as opposed to diode output, giving up to an extra10% efficiency
7) High voltage de-sulphation cycle.
8) New, low activity, standby mode to increase battery life.
9) Battery health program.
10) Multiple speed fan control to reduce unnecessary fan noise experienced by the customer, even though the new extreme efficiency reduces the need for fans, at high ambient temperatures: (40-50 deg C) fans would still be required to ensure operation.
11) Primary (processor digitally controlled) and an emergency backup secondary (analogue controlled) high voltage trip.
12) 32 LED information pane.
13) Internal scan and systems check.
14) Remote control
15) Small footprint and light weight
16) Include battery temperature sensor
17) As with all our marine chargers no exposed ferrous metals used, only aluminium/stainless steel/copper /brass/gold, exposed to air.
18) % power reduction to allow unit to work with restricted power available (available on local control or remote control panel),
19) Conforms to A.B.Y.C. drip test, is water proof from water directly dropped on to the top of the unit (+/ - 17 deg) if installed correctly (vertically)
20) The printed circuit boards are conformal coated for high humidity operations.

Tested to CE standards
EN61000-3-2 EN61000-3-3
EN55014-1 EN 55014-2
EN60335-2-29

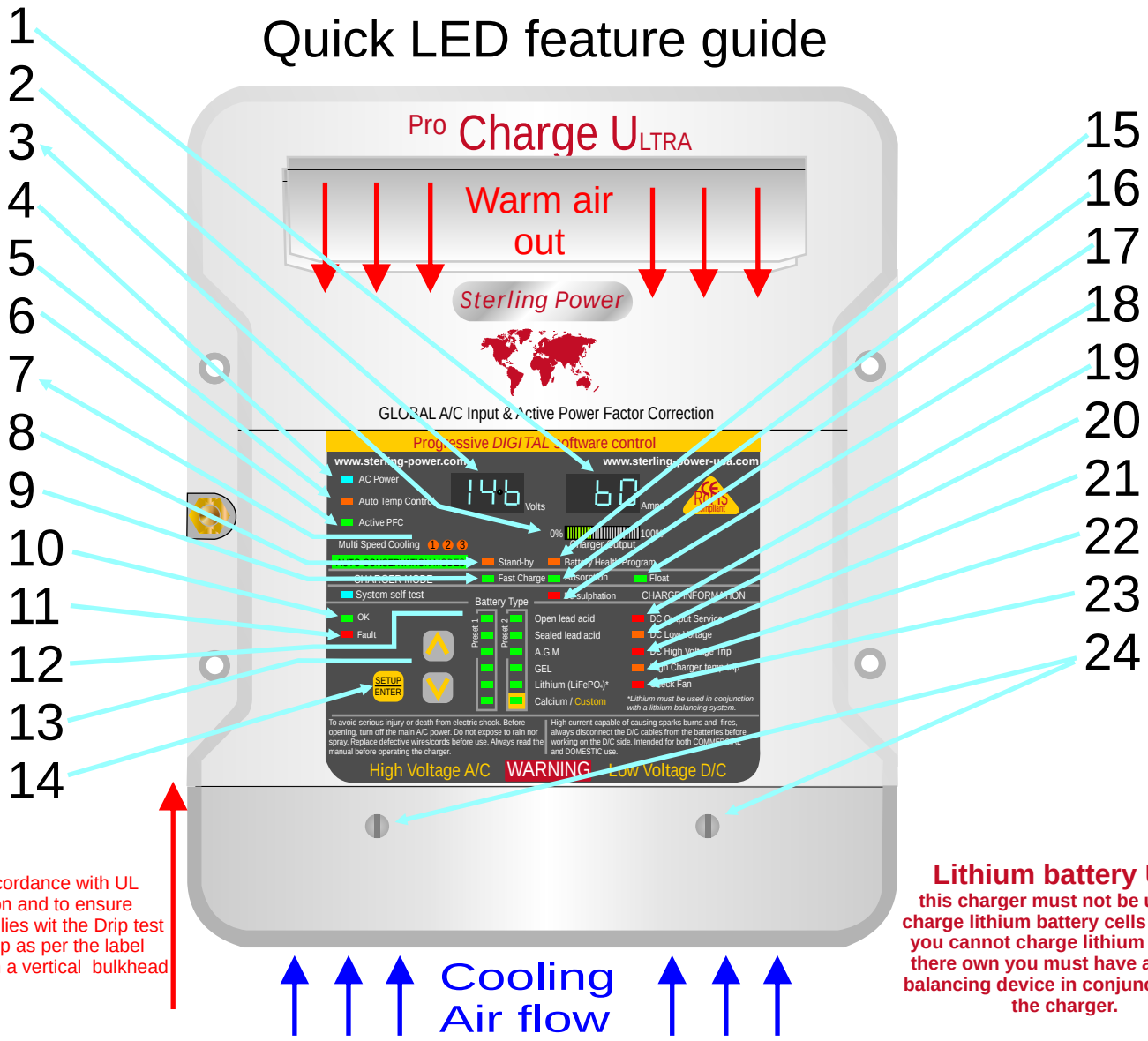
This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision of instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

Installation

Install in cool dry well ventilated space.
This product has a high heat tolerance and can be installed in a engine room.
This product is ignition protected and can be installed near the batteries.
Charger MUST be installed vertically to allow for convection air flow and also in the vertical position the product is drip proof.
The product will work in any position but we cannot guarantee the drip proof aspect in any other position

Quick LED feature guide



To Fit in accordance with UL specification and to ensure products complies wit the Drip test fit this way up as per the label and drawing on a vertical bulkhead

Cooling Air flow

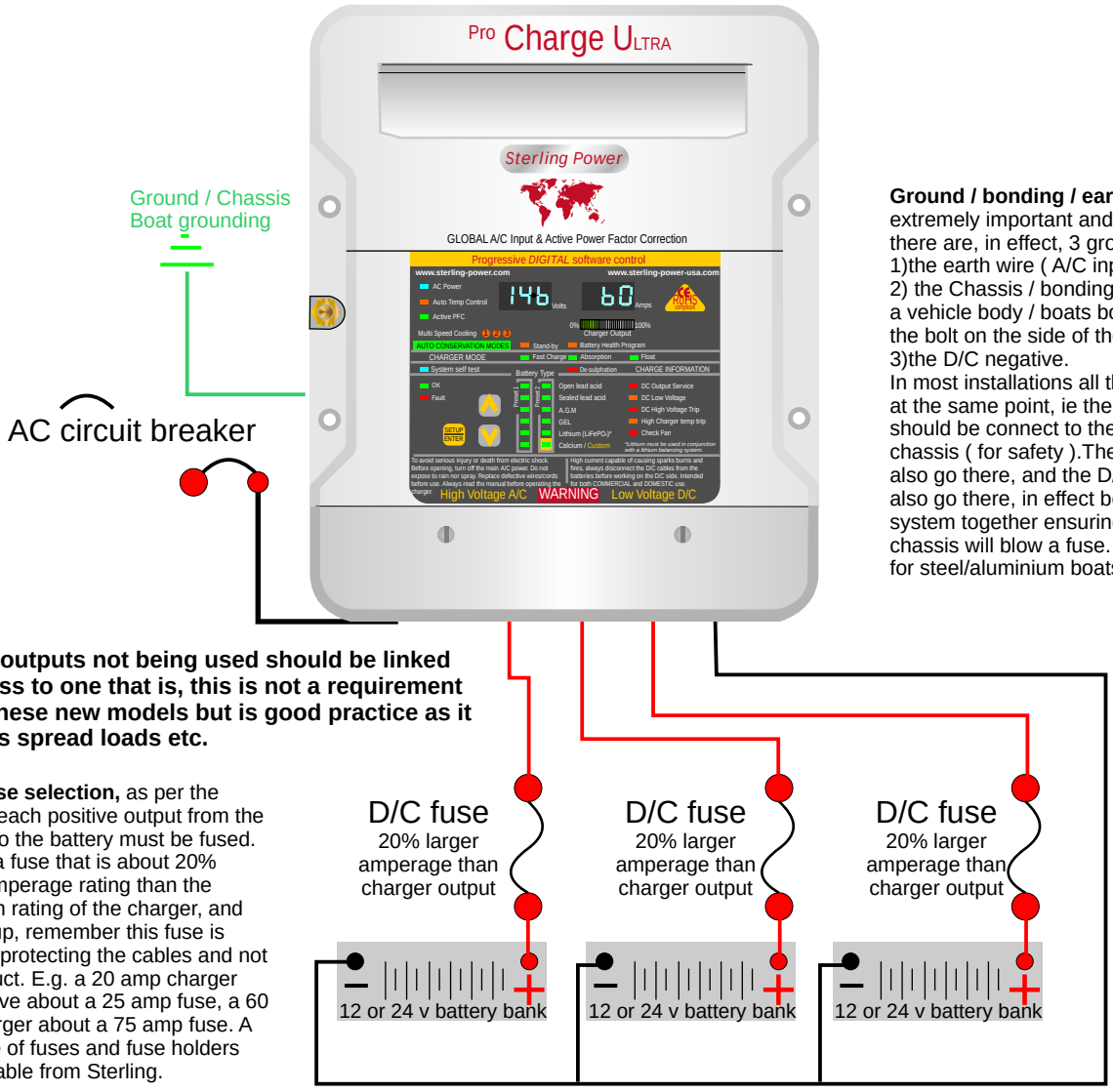
Lithium battery Use

this charger must not be used to charge lithium battery cells by itself, you cannot charge lithium cells on there own you must have a lithium balancing device in conjunction with the charger.

1) Ammeter, shows the total current being produced by the charger
2) Voltmeter, showing the average voltage being produced by the charger
3) Power meter, shows the % power being produced by the unit and the remaining power available
4) A/C power, shows the a/c power is connected and the product is live, flashes if power is available but the unit is switched off (see on/off later) push buttons. Setup and up arrow for 5 secs to activate.
5) Auto temp control, shows the battery temp sensor is connected and operational. If sensor not connected then the unit will default to a 20 deg C charge curve.
6) Shows that the active PFC (power Factor Correction is active)
7) Fan speed control, varies depending on temp, 3 speeds.
8) Standby, charger power system power requirement very low, unit on low float voltage to prolong battery life.
9) Fast charge unit on constant current mode
10) OK, unit operating within normal parameters
11) Fault, fatal fault, needs returned for repair
12) Battery type selector, shows which battery charger curve in operation (adjustable)
13) Buttons to select charge options (see later in instructions) also used to switch unit **off** or **on** in conjunction with the setup button (see 14)
Off select button plus down button for 5 sec
On select button plus up button for 5 sec
14) Button to enter selections, also use to switch unit on/off in conjunction with the up or down button
15) Battery health program, unit doing a 21 day de-sulphation cycle.
16) Absorption, charger on initial charge cycle.
17) De-sulphation cycle operational
18) Float, unit on float charge or power pack mode, main charge complete.
19) DC output service, output working correctly
20) DC output low voltage warning, either batteries are very low / more power is being taken than the charger can supply / or the charger is defective.
21) High voltage trip, the unit is defective and tripped itself, or a high back D/C voltage has been detected, like a wind generator reg gone defective.
22) High charger temp, if the unit is positioned in too hot an environment and over heated, or the fans have failed.
23) Check fans, fans are thought to be defective.
24) Case screws to access the wiring of the product.

Battery type Preset information (for 24 v x all voltages by 2)

Preset 1		Preset 2		Battery type Rough guide only	Absorption time factor	Minimum absorption time (mins)	Maximum absorption time (mins)
Charge	Float	Charge	Float				
14.8	13.6	14.7	13.4	Flooded/open lead acid	8	60	600
14.4	13.6	14.6	13.4	Sealed lead acid	10	360	720
14.35	13.35	14.6	13.7	AGM	9	60	480
14.0	13.7	14.4	13.8	Gel	10	600	1200
14.8	14.4	14.6	14.4	Lithium $LiFePO_4$	8	240	480
15.1	13.6	Custom set		Calcium / Custom	8	60	360
15.5	15.5	15.5	15.5	De-sulphation / Equalization	NA	240	240



Ground / bonding / earthing . This is extremely important and often overlooked there are, in effect, 3 grounds,
1)the earth wire (A/C input, the ground) ,
2) the Chassis / bonding ground (going to a vehicle body / boats bonding system, the bolt on the side of the charger)
3)the D/C negative.
In most installations all these will end up at the same point, ie the A/C power source should be connect to the boat/vehicle chassis (for safety).The chassis earth will also go there, and the D/C neg should also go there, in effect bonding the total system together ensuring any fault to the chassis will blow a fuse. This could vary for steel/aluminium boats.

Any outputs not being used should be linked across to one that is, this is not a requirement for these new models but is good practice as it helps spread loads etc.

D/C - Fuse selection, as per the diagram each positive output from the charger to the battery must be fused. Choose a fuse that is about 20% higher amperage rating than the maximum rating of the charger, and round it up, remember this fuse is primarily protecting the cables and not the product. E.g. a 20 amp charger would have about a 25 amp fuse, a 60 amp charger about a 75 amp fuse. A full range of fuses and fuse holders are available from Sterling.

A/C installation (input to charger)

Wiring, using ring or captive spade connections and a proper crimping tool attach the A/C cables Live (line) Neutral and Earth / Ground. Repeat the procedure for the breaker side of the install, support the cable every 18 inches/ 0.5 metre and protect from sharp edges when passing through bulkheads and all other openings as per any standards which apply to the installation.

AC BREAKING SIZE	AC input rating		AWG Cable length			
Charger Model	110 Volt Breaker	220 Volt Breaker	25ft (7.6m)	50ft (15.2m)	100ft (30.5m)	150ft (45.6m)
PCU1210 – 2 Output	6 Amp	4 Amp	18	16	14	12
PCU1215 – 3 Outputs	7 Amp	5 Amp	18	16	14	12
PCU1220 – 3 Outputs	8 Amp	6 Amp	18	14	12	10
PCU1230 – 3 Outputs	11 Amp	7 Amp	16	14	10	8
PCU1240 – 3 Outputs	14 Amp	8 Amp	16	12	10	8
PCU1250 – 3 Outputs	16 Amp	10 Amp	14	12	8	8
PCU1260 – 3 Outputs	16 Amp	10 Amp	14	12	8	8
PCU2420 – 3 Output	14 Amp	8 Amp	16	14	10	8
PCU2430 – 3 Outputs	14 Amp	8 Amp	16	14	10	8

D/C installation (output from charger)

Choosing cable- unlike A/C conductors, D/C are very sensitive to voltage drop. The longer the cable runs the larger the cable thickness needs to be, ensure only quality fire retardant cable is used.

IMPORTANT

The closer to the batteries you fit the charger the better. Not only do you save expensive cable you also get better performance from the charger.
The cable should be properly rated 105 deg C fire resistant. do not use solid cable or speaker wire

10 amp	Length of conductor (cable) to and from power source				
Distance	3m (10 ft)	5m (15ft)	7m (22ft)	8m (25ft)	9m (30ft)
AWG	14	12	10	10	10
15 amp					
Distance	3m (10 ft)	5m (15ft)	7m (22ft)	8m (25ft)	9m (30ft)
AWG	12	10	10	8	8
20 amp					
Distance	3m (10 ft)	5m (15ft)	7m (22ft)	8m (25ft)	9m (30ft)
AWG	10	10	8	6	6
30 amp					
Distance	3m (10 ft)	5m (15ft)	7m (22ft)	8m (25ft)	9m (30ft)
AWG	10	8	6	6	4
40 amp					
Distance	3m (10 ft)	5m (15ft)	7m (22ft)	8m (25ft)	9m (30ft)
AWG	8	6	6	4	4
50 amp					
Distance	3m (10 ft)	5m (15ft)	7m (22ft)	8m (25ft)	9m (30ft)
AWG	6	6	6	4	2
60 amp					
Distance	3m (10 ft)	5m (15ft)	7m (22ft)	8m (25ft)	9m (30ft)
AWG	6	4	4	2	2

There is a 2 year return to factory warranty with all Sterling product

Contact Sterling in Europe or USA. www.sterling-power.com www.sterling-power-usa.com

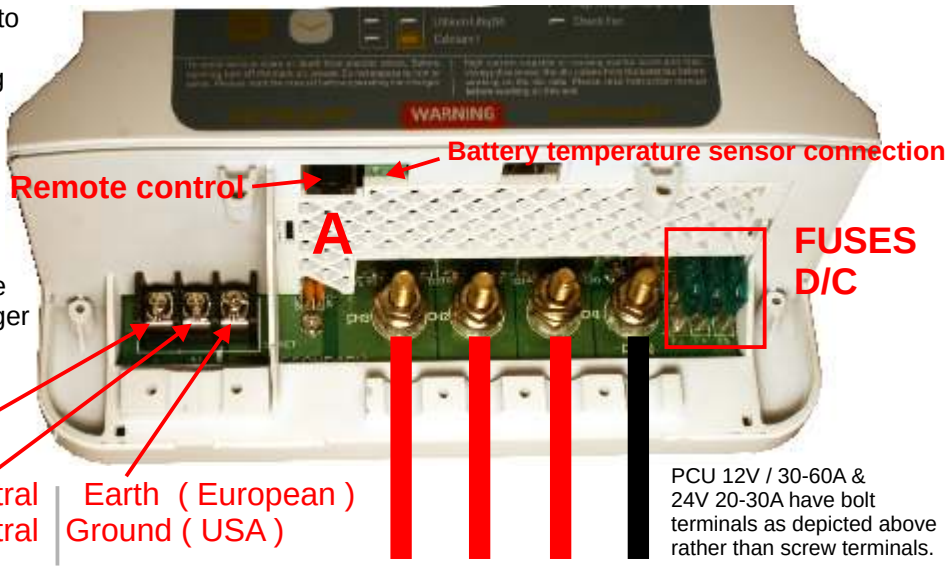
Remove the 2 screws on the bottom of the front cover marked number 24 on the previous pages quick guide this will reveal the main wiring area.

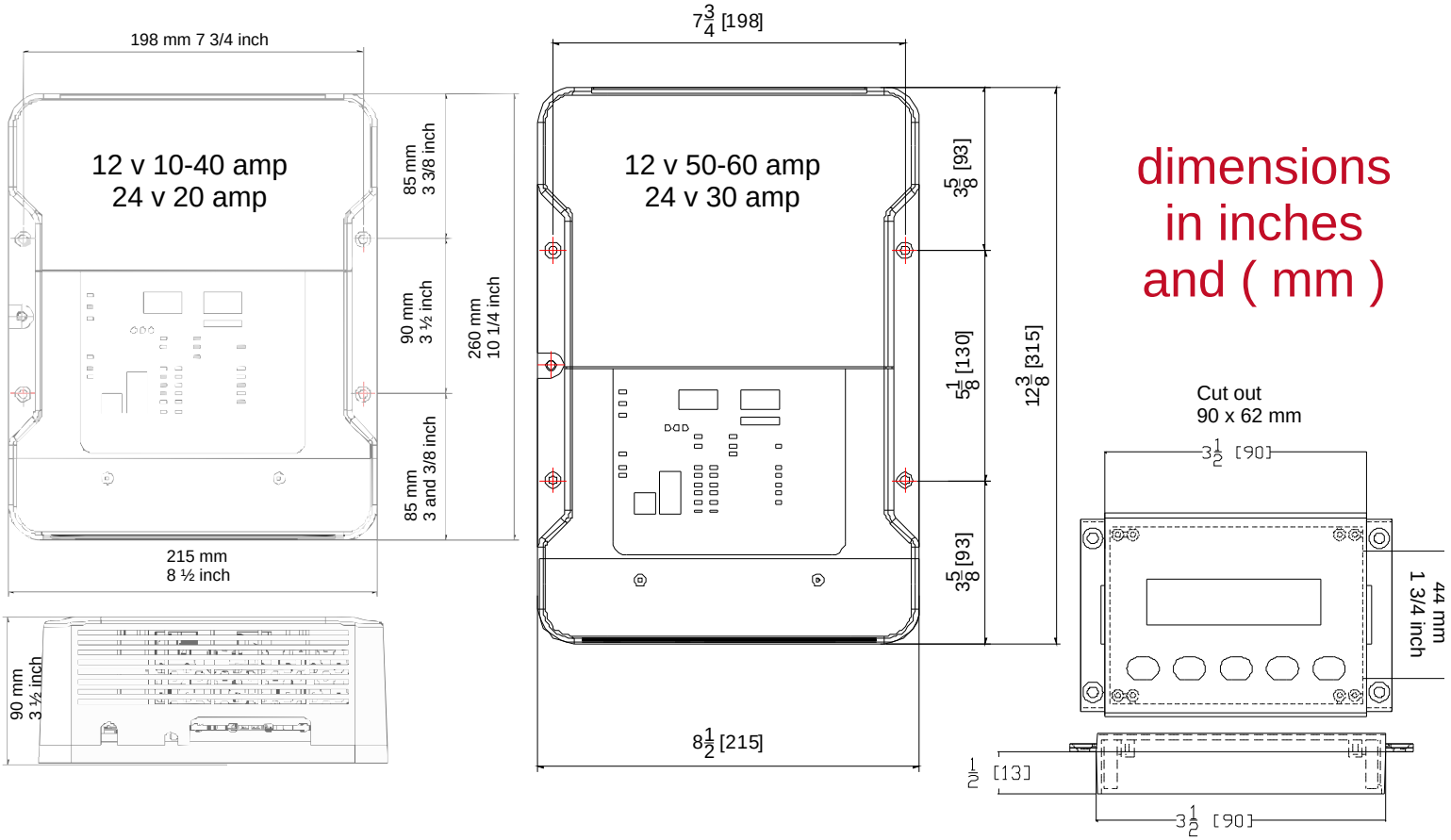
PCU 12V 10A & 20A models have ring terminal screw connectors as depicted above.
N.B. the 10A model has only 2 outputs, all other models have 3 outputs.

Remove the 2 screws on the A/C area and the 3 screws on the D/C clamps to enable the appropriate wires to be attached A/C input 90-270 volts A/C.
Ensure secure connections and correct crimping tools are used
D/C 12 or 24V depending on unit.

Remote control
Insert the Sterling remote control into the remote socket (telephone type)
Please note that when the remote is inserted the front program controls on the local panel no longer operate, control is in the remote. Remove the remote to use local controls.

Battery Temperature sensor
Connect the battery temp sensor to the position as shown, connect the sensor end to the neg stud terminal on one of the batteries which you think will be in the hottest environment.





INSTALLATION OF THE BATTERY CHARGER

- Position the charger in a cool, dry and well ventilated space, ensuring a reasonable airflow around the charger. Do not install in a cupboard or sealed compartment.

  Charger MUST be installed vertically.

  Install as close to the batteries as possible, preferably within 2 meters of the batteries.

  To obtain maximum waterproof/ingressproof rating (IP42) mount the charger vertically. However, the unit will work just as well in any fastening orientation so long as it is dry. With regards charging cooling, the unit has thermostatically controlled force draft cooling and is thus able to remain cool whether fastened in any orientation.

  Always isolate the A/C power before working on it

- - Before switching on the charger it is important to set up the battery type. Please choose a battery type from the table (at the bottom of page 2). There are so many different profiles, and battery companies change them all the time. It is impossible to keep up, so in order to assist our customers we offer the option of preset battery types: Flooded, sealed, AGM, Gel, $LiFePO_4$, calcium and custom. Each type has 2 preset algorithms, for instance: Gel preset 1 is the USA Gel spec (absorption 14.0V and float 13.7V) and Gel preset 2 is the Europe Gel spec (absorption 14.4V and float 13.7V). We also provide the charge voltages related to this cycle. In most cases these are correct; however, if in doubt install on the lower voltage setting until you have checked with your battery supplier.
- In the event of different types of batteries, the lowest battery voltage type must be selected. Never charge a battery on a higher setting than it should. If a bespoke battery is being used then use the CUSTOM setting, this gives the user the ability to set their own absorption/float voltages.
- Connect the cables as in the diagram. Ensure that all the terminals are used. In the event of only one battery being charged, connect the surplus positive output to another used output. This ensures correct regulation. Failure to do this will reduce the charging performance.
- IMPORTANT: Always connect the cables to the charger first then run them to the batteries. Never connect to the batteries first and then run to the charger.

Operating Instructions

From main charge only (not remote control)

On/off the unit can be switched off using the controls on the charger main control panel (it can also be switched on/off on the remote (see later)

Unit On press setup and the up button, hold for 10 sec.

Unit Off press setup / enter and down for 10 sec.

The blue A/C power LED will flash to show the power is available but the unit is not activated

SELECTING BATTERY TYPE

To select a battery type/charging profile perform the following:

1. Press and hold the “Setup/Enter” button for over 10 seconds, then release the button
2. The current battery type and Voltage/Amperage displays will flash. The voltage and ammeter will now display voltage, the left hand screen (marked voltmeter) will show the high charge voltage setting and the right hand screen (marked ammeter) will show the low charge / float / power pack voltage setting.
3. Use the “ ↑” and “ ↓” keys to scroll through all the different battery types. The LED display on the charger in the battery type section will move through the different types.
4. The Volts and Amps readout will display the charge/conditioning and float voltages for each profile highlighted.
5. Press the “Setup/Enter” button to confirm selection, the LED will remain solid or leave for 30 seconds and the selection will be locked in automatically .

ADJUSTING THE CUSTOM BATTERY TYPE SELECTION

NOTE: *****Damage can result to your batteries from improper use of the custom setting. Any damage experienced while using this setting is the responsibility of the user and not covered by any Sterling warranty. ALWAYS consult the battery manufacturer if you are unsure of the battery chemistry and charge profile required.

1. Follow above steps and select the “Custom” option on the battery type display and press enter to enter it.
2. The “Fast charge & Adsorption” LEDs will be blinking, indicating you are in the adjustment mode
4. The left hand meter will blink and the right hand meter will go out. The numbers on the left hand meter will be the high voltage setting, adjust as required by using the “ ↑” and “ ↓” to select voltage up to 15.1V, press enter when you have selected the correct voltage, then the right hand screen will flash, this is the float voltage settings again using the arrows to set this voltage then press enter to finish.

NOTE: During this process, real-time voltage and amperages will not be displayed.

SELF TEST MODE

1. Press and hold the “Setup/Enter” and the “ ↑” and “ ↓” buttons simultaneously for 10 seconds then release
2. The “Self Test” LED will flash until the test is complete
3. OK or Fault LED's will be displayed, see the **Troubleshooting** section if the Fault LED is illuminated**.**

FACTORY RESET

To return the unit to original factory settings (Flooded Lead Acid)

1. Enter battery type selection as above
2. Use the “↓” key until you leave the battery type LED panel then the de-sulphation light will flash, continue to the next setting, the 2 x voltmeters will display “FAC” “DEF” for factory default.
4. Press the “Setup/Enter” button to confirm selection, the charger will re-boot.

POWER LEVEL ADJUSTMENT

1. Hold the“ ↑” and “ ↓” buttons simultaneously for about 20 sec
2. Volts will display “PL” for Power Level, and the amps 100 for 100%
3. Press the “ ↓” to adjust the amperage display from 100, 75, 50, 25% output.
4. Press the “Setup/Enter” button to confirm selection.

NOTE: If no action is taken after 15 seconds, the unit reverts to 100% power.

OPTIONAL REMOTE

When the optional remote is installed, it will display the current status of the charger along with the voltage and amperage.

1. The Blue LED is illuminated when the power is ON
2. BACK LIGHT can be set to ON or OFF by toggling the on/off button, with short sharp action. The default is ON.
3 To switch the product off hold the button for about 3 seconds and release, the unit will shut down, to switch back on again simply push the button and the unit will restart.
4 ALARM can be silenced or made audible by toggling the ALARM button, default is audible

PROGRAMMING USING THE OPTIONAL REMOTE.

Remote control operation. When installing the remote control from new, if the charger is already on and you add the remote control the remote will not work, you must add the remote control then switch the charger off for 1 min then switch on again to reset the software, the charger will then pick up the remote’s presence and the remote will work.
Pressing SETUP/ENTER displays “SCROLLING”

1. using the and directional keys scroll through the below menu items.

2. Pressing SETUP/ENTER

. Enter scroll mode and it will display automatically each option every 10 seconds, or you can use the arrow buttons to speed up the scroll time if you need to get to information faster.
3. Using the directional keys again will display additional options to be selected, press SETUP/ENTER when done.

1) Charger name = displays charger model.
2) Charger status = displays charging /absorbation/float status.
3) Battery type selection, scroll through the battery types.
4) Time to absorption= displays the time left in absorption mode.
5) Run Time = displays units total running time.
6) Power Level= displays current output power levels, **allows for power reduction in this screen, push enter again to power reduce.**
7) Charger temperature
8) Battery temperature = displays battery temperature
10) Transformer temperature = displays the transformer temperature
11) Faults = displays any faults active or simply ”No faults displayed”
12) Company information
13) Total run time
14) Software version = the installed software version

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS - this manual contains important safety instructions for the Pro Charge Ultra

1) Do not expose this unit to rain or snow
2) Use of attachments not recommended or sold by Sterling Power, LLC will void warranty and may result in the risk of fire.

Remote control short cuts

By pressing the below sequence on the remote control you can quickly access the most used functions

press and hold for 10 seconds to force into “Float Mode”.

press and hold for 15 seconds for direct access to power reduction mode.

press these 3 and hold for 5 seconds to start a self test

press and hold for 3 seconds- restores factory defaults.

SHOCK OR PERSONAL INJURY.

3) Do not operate the unit if it has been dropped or visibly damaged in any way
4) Do not disassemble the unit. If service or repair is required please contact Sterling at www.sterling-power.com or www.sterling-power-usa.com
5) To reduce the risk of electrical shock, remove connection to AC shore / station

power and DC connections prior to maintenance or cleaning.
6) Turning off controls WILL NOT reduce this risk.
7) Use of extension cord should not be used unless absolutely necessary. If an extension cord must be used, make sure:
a) That pins on plug of extension cord are the same number, size and shape of those of the plug on the charger.
b) That extension cord is properly wired and in good electrical condition.
c) That wire size is large enough for AC ampere rating of charger as specified in table (page3)
6) Do not operate charger with damaged cord or plug - replace the cord or plug immediately.
7) Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
8) Do not disassemble charger; take it to a qualified serviceman when service or repair is required.
9)To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

WARNING – RISK OF EXPLOSIVE GASES
WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE HYDROGEN GAS DURING NORMAL BATTERY OPERATION. FOR THIS REASON IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.
! To reduce the risk of a battery explosion, follow these instructions and those published by the battery manufacturer and any equipment you intend to use in the vicinity of the battery(s). Carefully review the cautionary markings on this equipment.

! SPARK – Be very cautious about dropping metal objects such as screwdrivers and wrenches onto a battery. This could short-circuit the battery and immediately cause a spark that may result in a fire or explosion.

! REMOVE – All personal metal items such as rings, watches, bracelets, etc. when working near a battery. A battery can produce a short circuit current high enough to weld a ring or any other metal causing serious burns.

! DRY CELL BATTERIES – Never use the battery charger feature to charge dry cell batteries that are commonly used with home appliances i.e. a cordless power drill battery. These batteries may burst and cause injury to persons and damage property.

! FROZEN BATTERY – Never charge a frozen battery.

UNPACKING AND INSPECTION
Thoroughly inspect your unit.

11. PERSONAL PRECAUTIONS
a) Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
b) Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
c) Wear complete eye protection and clothing. Avoid touching eyes while working near batteries.
d) If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
e) NEVER smoke or allow a spark nor flame in vicinity of battery or engine.
f) Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical parts that may cause explosion.
g) Remove personal metal items such as rings, bracelets, necklaces, and watches when working with lead-acid battery. A lead-acid battery can produce a short-circuit high enough to weld a ring or the like to metal, causing a severe burn.
h) Use charger for charging a LEAD-ACID battery only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.

12. PREPARING TO CHARGE
a) if necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in vehicle are off, so as not to cause an arc.
b) Be sure area around battery is well ventilated while battery is being charged.
c) Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
d) Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.
e) Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
f) Determine voltage of battery by referring to battery manufactures owner's manual and make sure that output voltage selector switch is set at correct voltage. If charger has adjustable charge rate, charge battery initially at lowest rate.

13. CHARGER LOCATION
a) Locate charger as far away from battery as DC cables permit.
b) Never place charge directly above battery being charged from battery will corrode and damage charger.
c) Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery.
d) Do not operate charger in a closed-in area or restrict ventilation in any way.
e) Do not set a battery on top of charger.

14. DC CONNECTION PRECAUTION
a) Connect and disconnect DC output clips only after setting any charger switches to "OFF" position and removing AC cord from electric outlet. Never allow clips to touch each other.

15. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE/BOAT. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARE NEAR BATTERY.
a) Position AC and DC cords to reduce risk of damage
b) Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
c) Check polarity of battery posts. POSITIVE (POS,P,+) battery post usually has larger diameter than NEGATIVE (NEG,N,+) post.
d) Determine which post of the battery is grounded
e) For negative-grounded, connect POSITIVE (RED) clip from battery charger to POSITIVE (POS,P,+) ungrounded post of battery. Connect NEGATIVE (BLACK) clip to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines or sheet-metal. Connect to a heavy gauge/gage metal part of the frame or engine block.
g) When disconnecting charger, turn switches to off, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from vehicle chassis, then remove clip from battery terminal.
h) See operating instructions for length of charge information.

16. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:
a) Check polarity of battery posts. POSITIVE (POS, P, +) battery usually has a larger diameter than the NEGATIVE (NEG,N,-) post.
b) Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -)
c) Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
d) Position yourself and free end of cable as far away from battery as possible - then connect NEGATIVE (BLACK) CHARGER CLIP to free end of cable
e) Do not face battery when making final connection.

The package should contain the following:
1) Charger unit
2)Parts package including:
a.Owners/Installation manual
b.Temperature Probe

DAMAGE – If any parts are missing or damaged, or the unit has been damaged in shipping contact Sterling, do not take it back to the place of purchase as we can offer a faster service.

DO NOT attempt to install or operate the unit if it has been damaged in any way.

f) When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
g) A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.
Exception: The instruction manual for a battery charger, marked in accordance with exception No.2 to 49.3 and constructed to prevent current flow in excess of 0.1 ampere until the battery is connected (with correct polarity) followed by the activation of a manually operated control. Attach at least a 24-inch-long 6-guage (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post. Position yourself/free end of cables as far away from battery as possible- then connect NEGATIVE (BLACK) charger clip to free end of cable. Break first connection while as far away from battery as practical.

GROUNDING AND A/C POWER CORD CONNECTION

a) Charger should be grounded to reduce risk of electric shock. Charger is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.
DANGER - Never alter AC cord or plug provided - if it will not fit outlet, have proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electric shock.
b) For grounded, cord-connected battery chargers with an input rating less than 15A and intended for use with a global AC input (90V - 270V).
This battery charger is for use with a global AC input (90V - 270V) and has a grounding plug. A temporary adaptor, as shown (FIG RHS of page), may be used to connect this plug to a two-pole receptacle, if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician.
DANGER - Before using adapter as illustrated, be certain that center screw of outlet cover plate screw with a longer screw that will secure adapter ear or lug to outlet cover plate and make ground connection to grounded outlet.
c) For all other grounded, cord-connected battery chargers:
This battery charger is for use on a circuit having a nominal rating more than 90V (or This appliance is rated more than 15A and is for use on a circuit having a global AC input (90V - 270V) and is factory fitted with a specific electric cord and plug to permit connection to an acceptable electric circuit. Make sure that the charger is connected to an outlet having the same configuration as the plug. No adapter should be used with this charger.

d) For a permanently connected battery charger:
GROUNDING INSTRUCTIONS - This battery charger should be connected to a grounded, metal, permanent wiring system; or an equipment-grounding conductor should be run with circuit conductors and connected to equipment-grounding terminals or cable on battery charger. Connections to battery charger provided with a grounding pin:
e) For a direct plug-in battery charger provided with a grounding pin:
CAUTION - Risk of fire or Electric Shock. Connect battery charger directly to grounding receptacle (three-pong). An adapter should not be used with battery charger.
f) For a direct plug-in battery charger having a tab for semipermanent installation: Use only duplex receptacle having center screw; Secure unit in place by receptacle cover screw; and CAUTION and the following or equivalent: Risk of Electric Shock or Fire. Disconnect power to receptacle before installing or removing unit. When removing receptacle-cover screw, cover may fall across plug pins or receptacle may become displaced.
g) For a commercial battery charger that is intended to be permanently installed and un-tampered with, the charger should be installed so that it is not likely to be contacted by people.

The package should contain the following:
1) Charger unit
2)Parts package including:
a.Owners/Installation manual
b.Temperature Probe

DAMAGE – If any parts are missing or damaged, or the unit has been damaged in shipping contact Sterling, do not take it back to the place of purchase as we can offer a faster service.

DO NOT attempt to install or operate the unit if it has been damaged in any way.

FEATURES

√*AUTOMATIC GLOBAL AC INPUT* – This unit has been designed for 110/240 VAC operation at 60Hz(US) and 50Hz(European).

√*POWER FACTOR CORRECTION* – This ensures efficient operation of the unit regardless of the quality of the power input.

√*MULTIPLE BATTERY TYPE CHARGING CAPABILITY* – User selected battery types including new technologies such as Lithium (Lifep04)

√*SELECTABLE POWER LEVEL* – Adjust the amperage draw of the unit to prevent it from competing with other appliances when only a lower amperage shore / station power hookup is available.

√*FULLY AUTOMATIC* – Charge rates and battery maintenance automatically controlled based on battery chemistry selected. Automatically selects between Boos Charge, Absorption Conditioning and Float Ready

MAINTENANCE
This unit is solid state software controlled and requires no constant adjustments or attention, however, the following items should be checked:

On start up ensure the panel shows no fault LEDs

On start up check the conditions of the fuses and ensure there is no discolouration or corrosion round the fuse, also that the breaker will manually trip and reset

On start up check the fans cooling flow is not impede by debris, keep the area round the unit clear of items and dirt.

On Start up check for any traces of water / other liquids running down the front off the unit or any evidence of this (water stains).
Do not use the charger, find the leak and fix the leak or remount the charger to a safer place away from the water source.

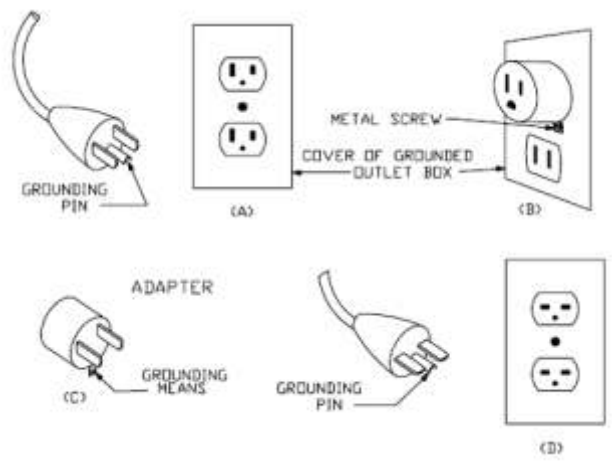
Check the battery charger terminals and the battery terminals for corrosion monthly, clean as required.

As per battery manufactures instructions check and top up the batteries with distilled water as required monthly. Do not use tap or bottled water as this will destroy the batteries.

Check the wires for any burning or chaffing where the wires pass through bulkheads monthly. Repair / replace as required

When the charger is on, feel the temperature of the batteries, they should not be noticeably hotter than the surrounding ambient temperature. If the batteries are hot to the touch then they need major investigation, check the charger voltage is within parameters. If it is then the battery/s must be checked as they are probably defective. **Never walk away from warm-hot batteries as there is a major problem, switch the charger off.**

Grounding Methods



There is a 2 year return to factory warranty with all Sterling products
Contact Sterling in Europe or USA. www.sterling-power.com www.sterling-power-usa.com

Customer Service & Warranty

Your 100 % satisfaction is our goal. We realise that every customer and circumstance is unique. If you have a problem, question, or comment please do not hesitate to contact us. We welcome you to contact us even after the warranty and return time has passed.

Product Warranty:

Each product manufactured by Sterling Power comes with at least a 2 year limited factory warranty. Certain Products have a warranty period of time greater than 2 years. Each product is guaranteed against defects in material or workmanship from the date of purchase. At our discretion, we will repair or replace free of charge any defects in material or workmanship that fall within the warranty period of the Sterling Power product. The following conditions do apply:

- The original receipt or proof of purchase must be submitted to claim warranty. If proof cannot be located a warranty is calculated from the date of manufacture.
- Our warranty covers manufacture and material defects. Damages caused by abuse, neglect, accident, alterations and improper use are not covered under our warranty.
- Warranty is null and void if damage occurs due to negligent repairs.
- Customer is responsible for inbound shipping costs of the product to Sterling Power either in the USA or England.
- Sterling Power will ship the repaired or warranty replacement product back to the purchaser at their cost.

If your order was damaged in transit or arrives with an error, please contact us ASAP so we may take care of the matter promptly and at no expense to you. This only applies for shipping which was undertaken by our company and does not apply for shipping organised by yourself. Please do not throw out any shipping or packaging materials.

All returns for any reason will require a proof of purchase with the purchase date. The proof of purchase must be sent with the returned shipment. If you have no proof of purchase call the vendor who supplied you and acquire the appropriate documentation.

To make a claim under warranty, call our customer care line at (USA 1-(207)-226-3500, England 01905 771771). We will make the best effort to repair or replace the product, if found to be defective within the terms of the warranty. Sterling Power will ship the repaired or warranty replacement product back to the purchaser, if purchased from us.

Please review the documentation included with your purchase. Our warranty only covers orders purchased from Sterling Power. We cannot accept warranty claims from any other Sterling Power distributor. Purchase or other acceptance of the product shall be on the condition and agreement that Sterling Power USA LLC and Sterling Power LTD shall not be liable for incidental or consequential damages of any kind. Some states may not allow the exclusion or limitation of consequential damages, so, the above limitations may not apply to you. Additionally, Sterling Power USA and Sterling Power LTD neither assumes nor authorizes any person for any obligation or liability in connection with the sale of this product. This warranty is made in lieu of all other obligations or liabilities. This warranty provides you specific legal rights and you may also have other rights, which vary from state to state. This warranty is in lieu of all other, expressed or implied.

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